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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,506	02/04/2005	Toshihiko Sumida	10921.0273USWO	1317

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EXAMINER	
LAWRENCE JR, FRANK M	
ART UNIT	PAPER NUMBER
1724	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/523,506	SUMIDA ET AL.	
	Examiner	Art Unit	
	Frank M. Lawrence	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 February 2005 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Leitgeb et al. (4,640,694).

4. Leitgeb et al. '694 teach an adsorption process cycle using three adsorption columns, comprising an adsorption step (ADS) for removing a contaminant to enrich a target gas, a first pressure reduction step (E0) that releases a led-out gas, a second pressure reduction step (E1) that releases a second led-out gas, a desorption step (E2) for desorbing at least part of the contaminant, a scrubbing step (S) to purge a gas using the first led-out gas, a first repressurizing step (B1) using the second led-out gas, and a second repressurizing step (B0) using gas led out from the adsorption step (see figures, col. 7, lines 39-64). The process can be used for air fractionation or for the purification of raw hydrogen, and can remove carbon dioxide as a contaminant (col. 4, line 59 to col. 5, line 52).

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Marot et al. (5,549,733).

6. Marot et al. '733 teach an adsorption process cycle using multiple sorbent columns, comprising an adsorption step (a) for removing a contaminant to enrich a target gas, a first pressure reduction step (b1) that releases a led-out gas, a second pressure reduction step (b2) that releases a second led-out gas, a desorption step (c) for desorbing at least part of the contaminant, a scrubbing step (d) to purge a gas using the first led-out gas, a first repressurizing step (f) using the second led-out gas, and a second repressurizing step (e) using gas led out from the adsorption step (see figure, col. 2, lines 8-40).

7. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by the Japanese reference JP 54-43179.

8. JP '179 teaches an adsorption process cycle using four sorbent columns, comprising an adsorption step (1,2) for removing a contaminant to enrich a target gas, a first pressure reduction step (3) that releases a led-out gas, a second pressure reduction step (4) that releases a second led-out gas, a desorption step (6) for desorbing at least part of the contaminant, a scrubbing step (7) to purge a gas using the first led-out gas, an additional scrubbing step (8) using part of the product gas led out from the adsorption step, a first repressurizing step (9) using the second led-out gas, and a second repressurizing step (11) using gas led out from the adsorption step (see abstract, figures).

9. Claims 1, 2 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by the European patent application EP 0598321 A1.

10. EP '321 teaches an adsorption process cycle using three sorbent columns, comprising an adsorption step (A) for removing a contaminant to enrich a target gas, a first pressure reduction step (DP1) that releases a led-out gas, a second pressure reduction step (DP2) that releases a second led-out gas, a desorption step (DES) for desorbing at least part of the contaminant, a scrubbing step (PU) to purge a gas using the first led-out gas, a first repressurizing step (PE) using the second led-out gas, and a second repressurizing step (PRP) using gas led out from the adsorption step (see figures, page 8, line 13 to page 10, line 15). The process can be used to remove carbon dioxide from air, which will enrich the amount of hydrogen present in air in the product gas. Process pressure ranges are 14-30 psia for adsorption, 11.5-25 psia for the first pressure reduction, 7.7-21.3 psia for the second pressure reduction, and 1.0-10.0 psia for the desorption step, which anticipate the pressure ranges of claims 4 and 5.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references listed on the attached PTO-892 form disclose adsorption processes having multiple pressure adjustments.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Frank M. Lawrence
Primary Examiner
Art Unit 1724

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Frank Lawrence
2-1-07